

# ATTENTION

MOTHERBOARD HAS PINS 53, 20 & 70  
CONNECTED TO GROUND PER IEEE  
S-100 BUS DEFINITION

Confirm your cards don't use these lines  
BEFORE PLUGGING THEM  
INTO THE CARD CAGE!!!!

You may release the above bus lines by CAREFULLY  
cutting the ground lands from pins 20, 53 & 70 with a sharp Xacto knife.

The ground lands are attached every other  
connector on the solder side of the motherboard

INTEGRAND RESEARCH CORP. ~~9474 AVE 296~~ VISALIA, CA ~~93277~~

INSTRUCTION SHEET - ALL 800 SERIES MAINFRAMES AND POWER SUPPLIES

1. UNPACK UNIT CAREFULLY. The cabinet and power supply are shipped in separate packages to assure safe arrival. If you have ordered only a power supply or a cabinet you will naturally have only one carton.
2. INSPECT THE EQUIPMENT TO SEE YOU HAVE THE RIGHT STUFF.
3. INSPECT THE EQUIPMENT FOR SHIPPING DAMAGE. If the equipment has been damaged in transit a claim must be filed with the transportation company IMMEDIATELY. This is your responsibility. The freight company will want to inspect the damage, so be sure to save all the packing material and boxes. If you need assistance in filing your claim, we will assist you.
4. YOU SHOULD HAVE A PACKAGE CONTAINING DRAWINGS FOR THE EQUIPMENT. We send schematics and PC board layouts for all parts of the system (we don't send a layout of the motherboard though). If you are missing drawings for any part of the equipment please drop us a note so we might send it to you.

!!!!!!!UNPLUG UNIT BEFORE PERFORMING ANY WORK ON EQUIPMENT!!!!!!!

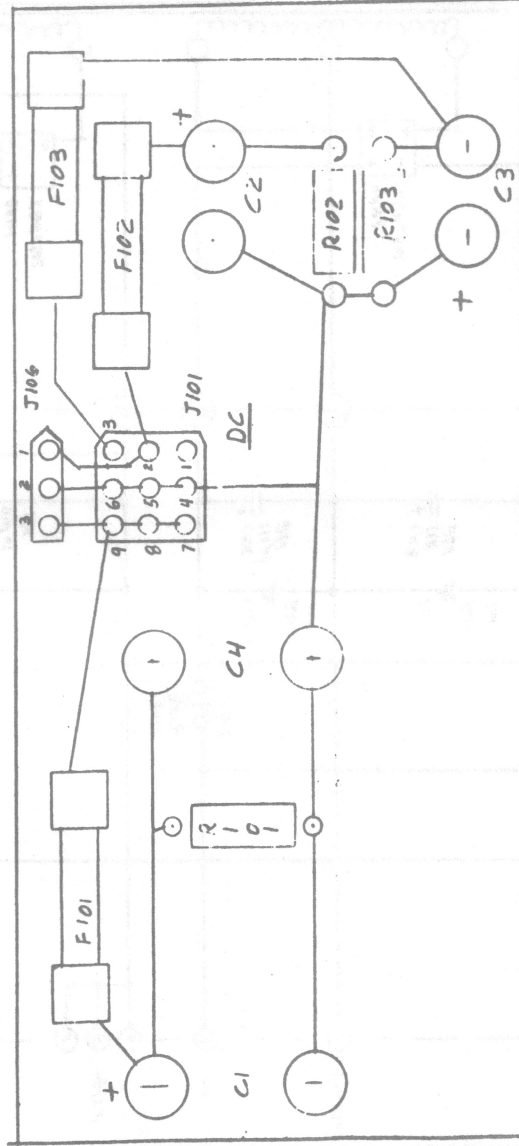
5. ORIENT THE SUPPLY. P800, P894--TRANS TO RIGHT SIDE of chassis  
PX/5-----TRANS TO REAR  
P800A-----AC POWER CABLE TO REAR  
INSTALL SCREWS. P800,PX/5---3 ea 10-32 thru bottom  
P800A-----4 ea  
P894-----4 ea (6 optional)
6. INSTALL AC CONNECTOR. Plug ac connector (on the end of a cable which comes from the power trans) from supply into the mating ac connector on the chassis rear panel. The ac connector on a 115 volt chassis and power supply is a 3 pin. On a 220 volt version the connector is a 4 pin. On any models which support 8" disk drives, there are 2 ac connectors on the rear panel---the power supply goes to one, the ac motors of the disk drives go to the other.
7. ADJUST TRANSFORMER TAPS TO LOCAL LINE VOLTAGE. BE CERTAIN THE AC MAINS PLUG IS REMOVED FROM THE WALL WHEN CHANGING TAPS!!!! Line voltages are dangerous and can PERMANENTLY cancel your ticket--so watch it! P800A- since the P800A has 2 power transformers, each one may be independently adjusted to either the nominal local line voltage or to give the required dc voltages with the loads you are running in your system. P800,P894,PX/5- move the tap to the level which corresponds to your nominal local line voltage. The setting will be somewhat dependent on the current drawn by your system. Since the power supplies for the S100 bus are unregulated, the supply outputs will vary with both the value of the local line voltage and the amount of current required to run the computer. A small system will require a smaller amount of current from the power supply-loading the supply less. You will probably want to adjust the transformer tap HIGHER to REDUCE the output voltages of the supply when running a light load. We suggest that the taps be set so the 8 volt supply runs between 8 and 10 volts dc (as measured on a dc voltmeter). If the voltages are allowed to be too low, the voltage regulators on the computer cards will drop out of regulation. If the power supply voltages are allowed to be too high, the voltage regulators will overheat and malfunction.

8. ATTACH DC CABLES TO POWER SUPPLY. P800,P800A,PX/5- each of these supplies have a SINGLE DC OUTPUT connector. If you have the IR motherboard and cable, plug the free end of the cable into the 9 pin connector located on the pc card of the supply- OBSERVE KEYING of the connector. P894- this supply has TWO DC OUTPUT connectors. If you have the IR motherboard and cable, plug the free end of the MB cable into the 9 pin connector on the HORIZONTAL pc card of the supply- OBSERVE KEYING. If you have the IR disk drive power cable set, plug the 12 pin connector on the larger cable into the 12 pin connector on the VERTICAL pc card on the power supply (this supplies the regulated voltages to the disk drives). BEFORE PLUGGING DRIVES INTO CABLE - IT IS A WISE PRECAUTION TO CHECK VOLTAGES ON ALL POWER PINS WITH VOLTMETER FOR CORRECT VOLTAGE AND POLARITY.

9. COOLING. The Main/Frame will have maximum cooling with the cover ON. The power supply should ALWAYS be bolted in place to afford best cooling and safety-it's not nice to have the supply flapping about loose in the cabinet! If you have one or two cards which run hotter than the others, it's a good idea to leave an empty card slot between the component side of the hot board and the back of the next board. A cool computer is a happy computer.

10. ADJUSTMENT OF THE CARD CAGE. The card cage may be adjusted for card width and guide to connector alignment. By loosening the screws which retain the cage sides, the card width may be aligned. The connector to guide alignment is accomplished by loosening the motherboard retaining screws and sliding the MB in its mounting slots. For a complete alignment we suggest loosening all the screws on the card cage and the screws which secure the MB. Plug TWO pc cards into the MB connectors- one near each end of the MB. Align the cards so they match the appropriate plastic guides without distorting the cards-by moving the MB. Next adjust and tighten the cage sides and ends. Now tighten the MB screws.

11. CONNECTOR INSTALLATION. The connectors which are accomodated by the IR motherboard are .125 pin to pin and .250 row to row spacing. PLEASE, don't cheat yourself and buy the cheapest connectors you can find. The connector is a very important part of the system. We recommend you use a GOLD PLATED connector with bifurcated bellows contacts. Use a SMALL WATTAGE SOLDERING IRON to install connectors. We urge the use of a temperature controlled iron like the Weller WTCP with a 700C tip like Weller PTA7. Use only ROSIN CORE SOLDER. A 63/37 alloy of .025 diameter is best. CHECK FOR SOLDER BRIDGES AND UNSOLDERED CONNECTIONS WITH A MAGNIFYING GLASS, many problems are hard to see without a glass. HINT: MAKE SURE ALL THE CONNECTOR PINS ARE THROUGH THE BOARD AND CONNECTOR IS PROPERLY SEATED )BEFORE STARTING TO SOLDER. Install only 1 connector at a time. Solder the 2 pins on each end first then check to see if all is OK before proceeding with remaining pins. Once all connectors have been installed and soldered it is a good practice to measure between adjacent tracks with an ohmmeter before applying power to the board--be sure to check traces next to the power buses especially.

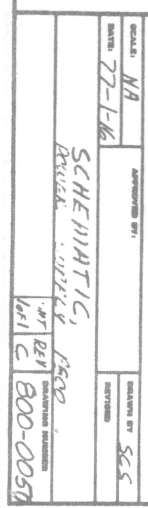


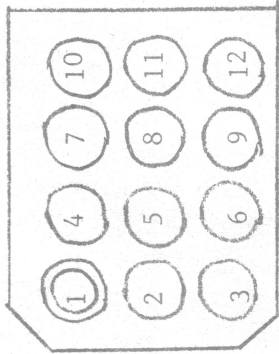
**NOTE:**

1. C1-C4 ARE PART OF CHASSIS ASSY.  
SHOWN FOR REFERENCE ONLY.
2. J104 IS PART OF CS-5 CABLE SET.  
IT IS A CUSTOMER INSTALLED CONNECTOR.

INTEGRAND VISALIA, CA		DESIGNED BY SCS
SCALE: 2:1	APPROVED BY:	REVISED
DATE: 790622	PC ASSY PADO POWER SUPPLY	
DRAWING NUMBER FEJ C		REV. 3 800-036







IMPORTANT!!!!!!!

SUPPORT THE OPPOSITE  
SIDE OF THE PC  
CARD WITH YOUR  
FINGERS WHEN INSTALL-  
ING OR REMOVING  
MATING CONNECTOR

CONNECTOR SHOWN AS YOU FACE  
COMPONENT SIDE OF BOARD

MATING CONNECTOR:

MOLEX 03-09-1122 BLOCK  
02-09-1103 FEMALE PIN  
02-09-2103 MALE PIN

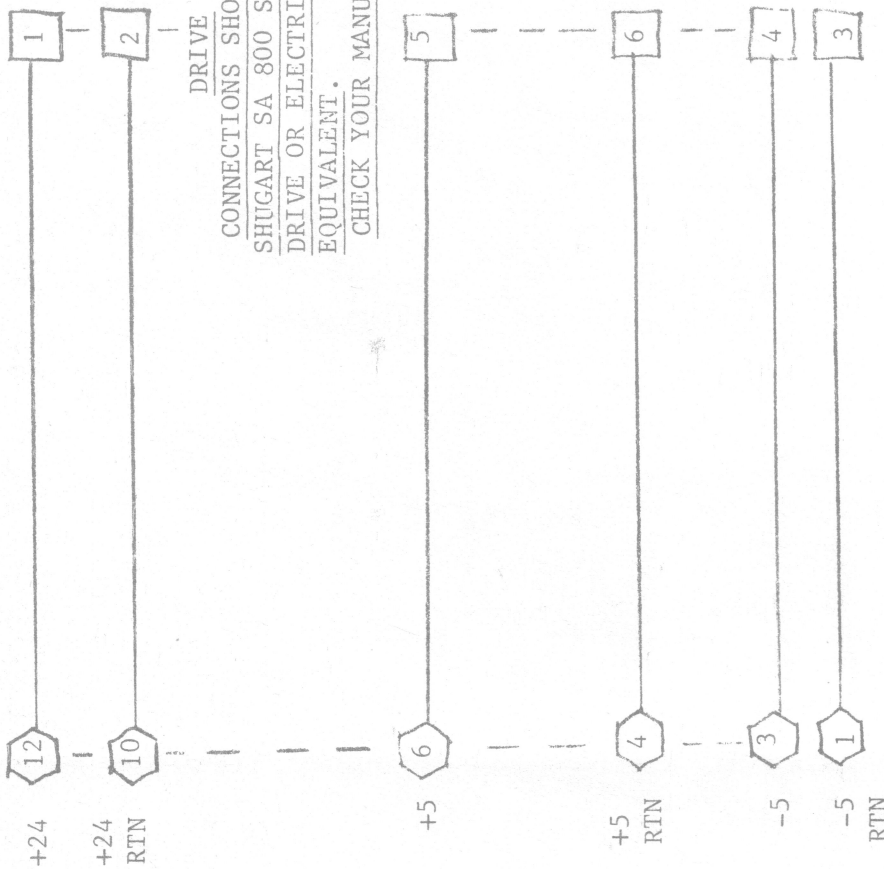
PIN	VOLTAGE	REMARKS
1	RETURN	
2	-5	
3	-5	
4	RETURN	
5	+5	
6	+5	
7	RETURN	
8	RETURN	
9	RETURN	
10	RETURN	
11	+24	
12	+24	

NOTES:

1. ALL RETURNS ARE TIED TOGETHER. THE RETURNS ARE FLOATING WITH RESPECT TO THE CHASSIS.
2. RETURN=GROUND in some terminologies!

P202 POWER SUPPLY

DRIVE DC CONNECTOR



DRIVE  
CONNECTIONS SHOWN FOR  
SHUGART SA 800 SERIES  
DRIVE OR ELECTRICAL  
EQUIVALENT.  
CHECK YOUR MANUAL!!!!

TYPICAL POWER SUPPLY CONNECTION  
CONSULT DRIVE MANUAL FOR EXACT REQUIREMENTS

ALL WIRING #18 AWG MINIMUM.  
IF 2 DRIVES ARE USED WIRE EACH SEPARATELY FROM POWER SUPPLY

INTEGRAND

VISALIA, CA USA

SCALE:

APPROVED BY:

DRAWN BY SCS

DATE:

REVISED

PRELIMINARY DATA-

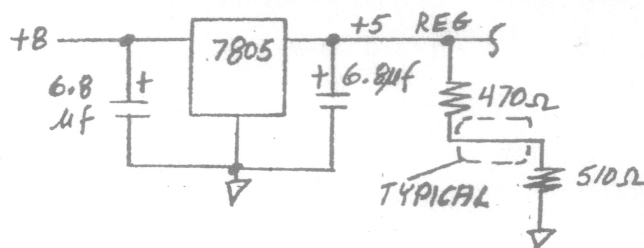
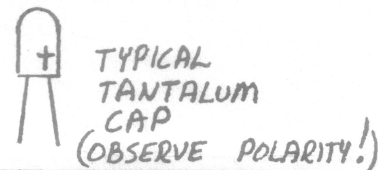
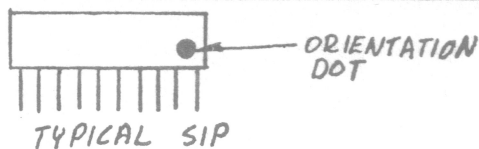
DC CONNECTIONS P894, P794, P895

DRAWING NUMBER

{ ENDS OF MOTHERBOARD -  
CONNECTOR SIDE SHOWN }

PARTS LIST - T801 TERMINATOR KIT

A1, A2	7805 (TO220 CASE) REGULATOR
C1-CB	6.8 $\mu$ f 15V TANTALUM CAP
R1-R10	470 $\Omega$ 10 PIN SIP (USUALLY MARKED "471")
R11-R20	510 $\Omega$ 10 PIN SIP (USUALLY MARKED "511")
2 EA	4-40 X 1/4 SCREW
2 EA	4-40 NUT
1 EA	HEAT SINK



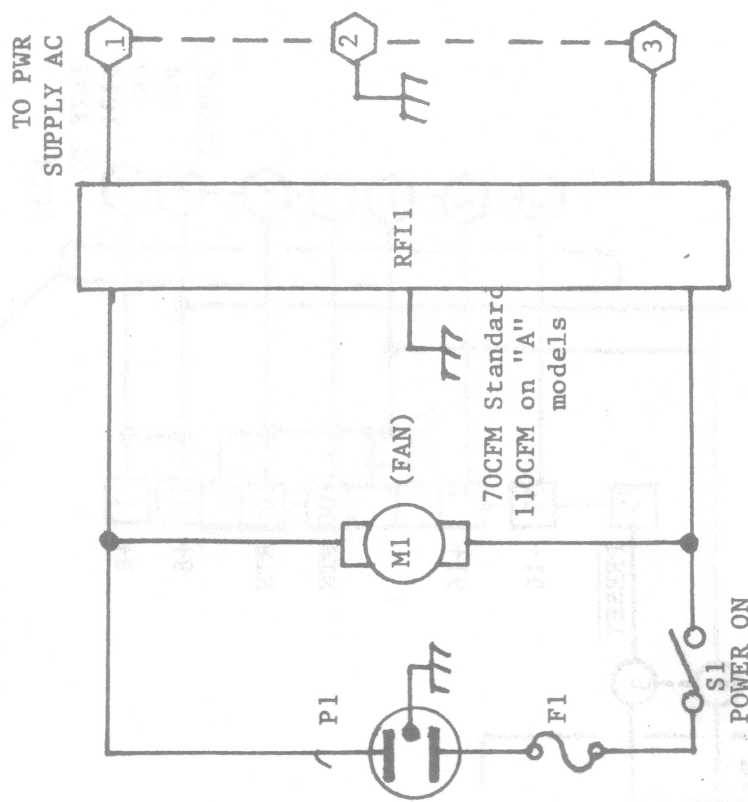
MOLEX  
RESET  
CONNECTOR

1. MOUNT SIPs. OBSERVE ORIENTATION.
2. MOUNT A1 & A2. LEAVE LEADS FULL LENGTH. PUT 1/8" LEAD ON SOLDER SIDE OF PC.
3. INSTALL C1-CB. MAKE SURE C1 & C2 DO NOT INTERFERE WITH POWER CONNECTOR
- ④ MOUNT HEAT SINK TO A1 & A2 ON HEAT SINK SURFACE. USE 4-40 X 1/4 SCREWS - HEADS AT BOARD EDGE, NUTS NEAREST CONNECTORS.

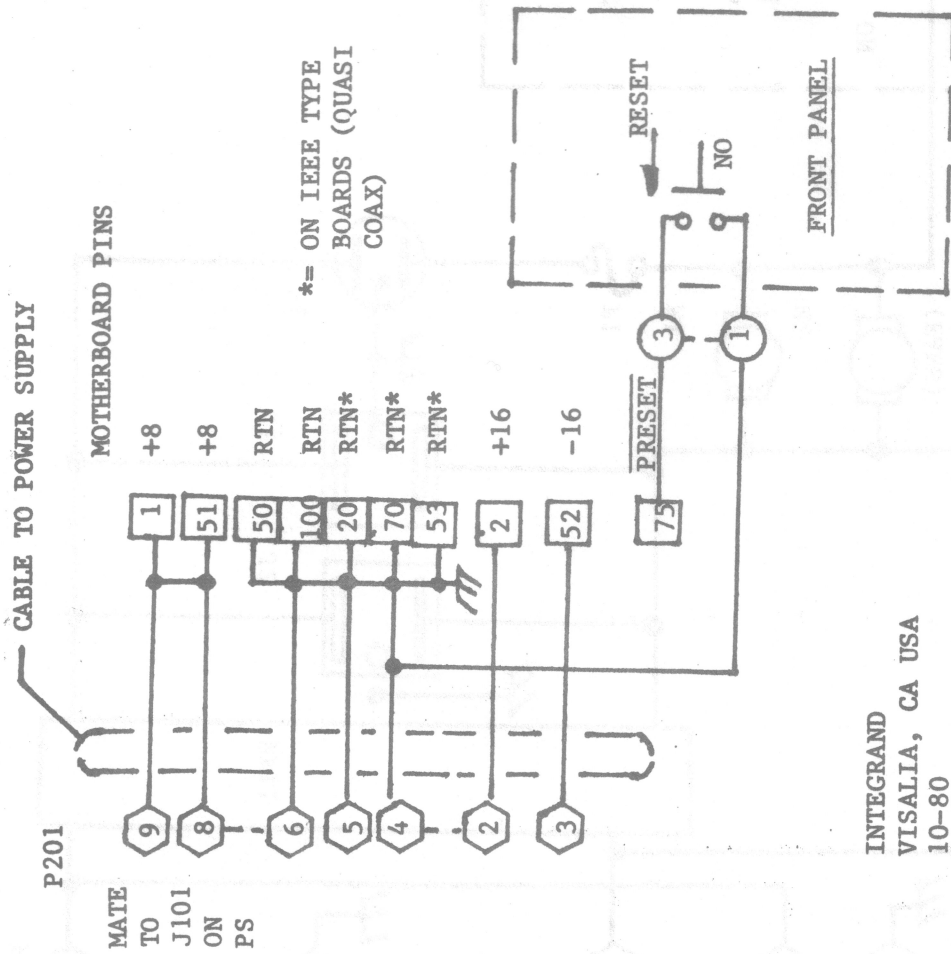
HEAT SINK  
SURFACE THIS SIDE  
2 PLACES. ④

POWER  
CONNECTORS

"SIP  
ORIENTATION  
DOT"



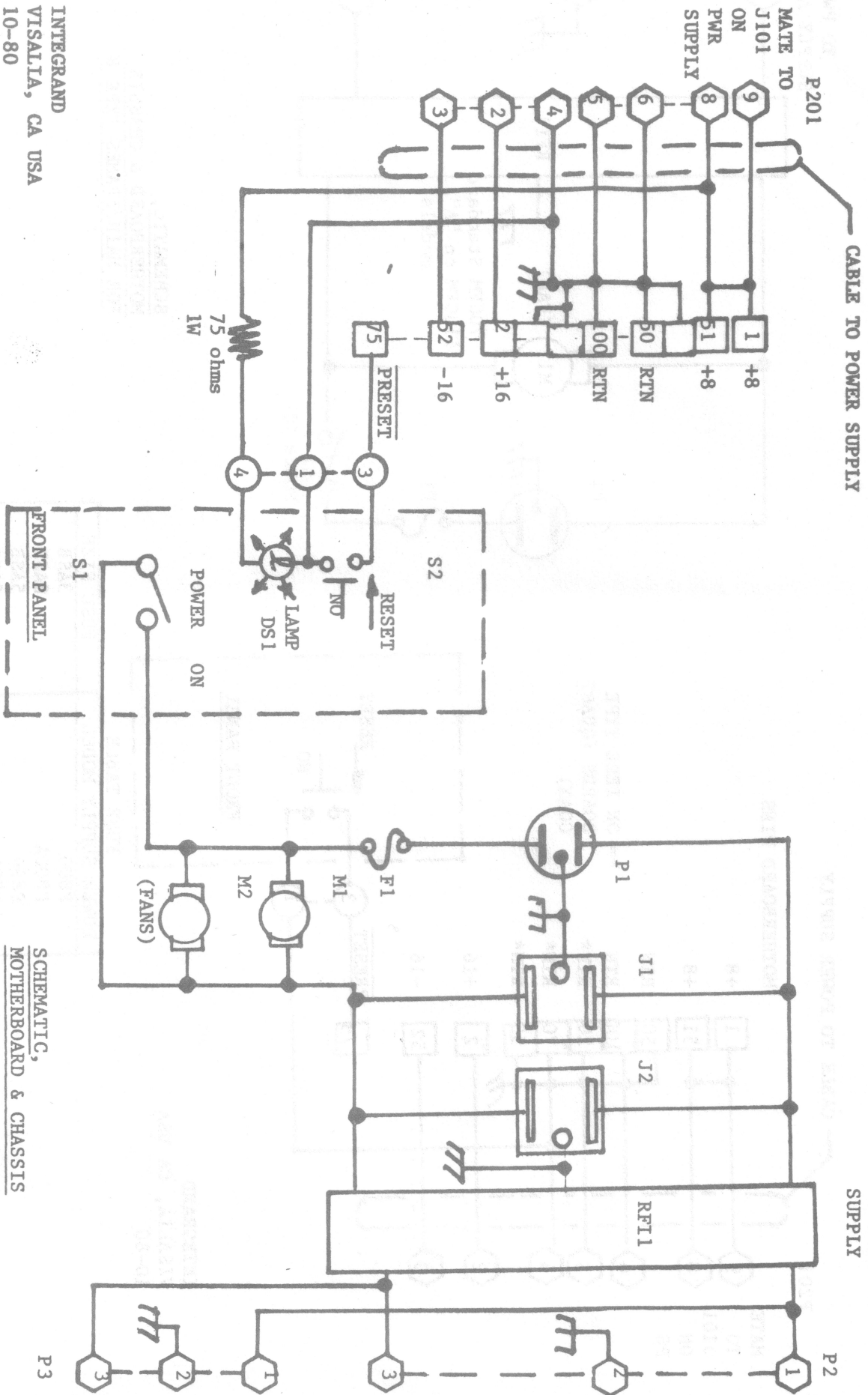
SCHEMATIC,  
MOTHERBOARD & CHASSIS  
FOR MAIN/FRAMES TYPE B



FUSE TABLE	
POWER SUPPLY MODEL	FUSE SIZE
P800	3ASB
P800A	8ASB
P894	5ASB
P896	8ASB
PX/5	3ASB

**INTEGRAND  
VISALIA, CA USA  
10-80**

INTEGRAND  
VISALIA, CA USA  
10-80



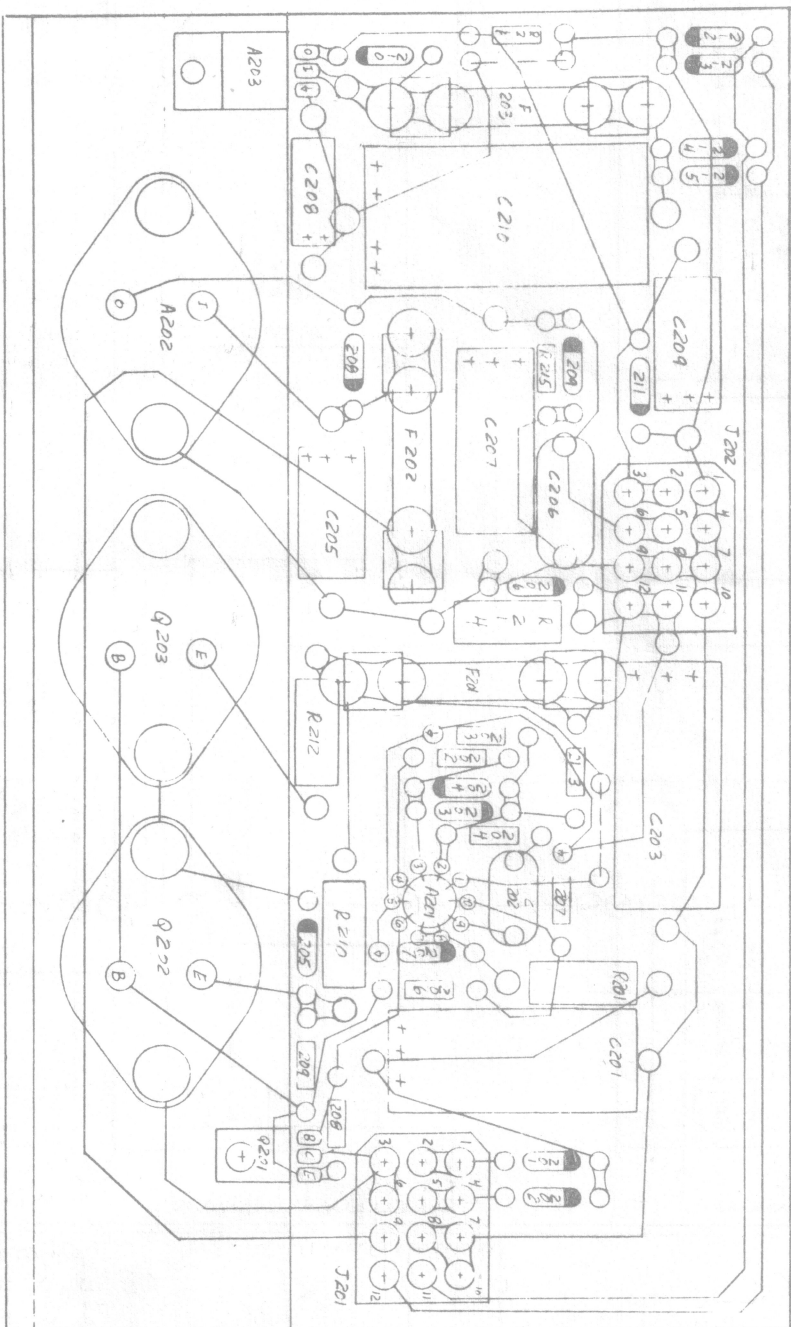
SCHEMATIC,  
MOTHERBOARD & CHASSIS  
FOR MANI/FRAMES TYPE A





Notes:

DC OUTPUTS ARE ON J202 ONLY.



INTEGRAND	
WISMA, CA	
SCALE:	2:1
DATE:	7/10/80
APPROVED BY:	
PC	7/10/80
HSSV REGULATOR	
POWER SUPPLY	
DRAWING NUMBER	894-030
REV	NC